



Descriptions of five new muricacean gastropods and comments
on two additional species, in the Families Muricidae
and Coralliophilidae: (Mollusca)

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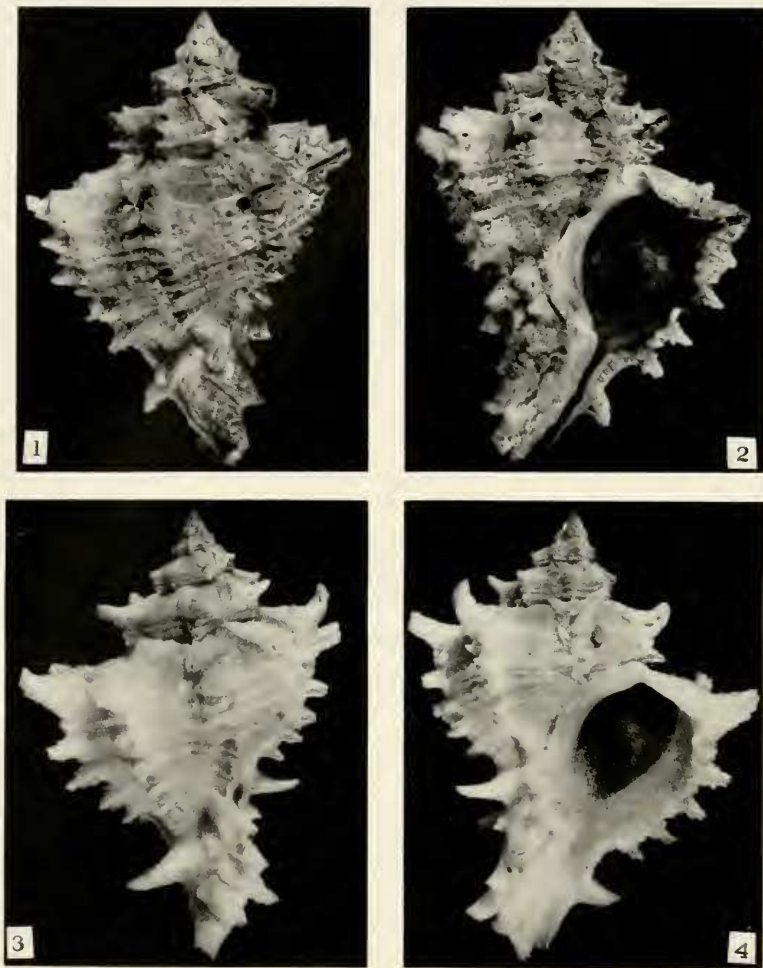
Abstract. Five new species of muricacean (superfamily Muriceae) gastropods, one muricid and four coralliophilids, are described as follows: from the Persian Gulf, *Hexaplex rileyi* (Muricidae: Muricinae); from Isla Isabella (=Albemarle Island), Galápagos Islands, *Babelomurex deroyorum* (Coralliophilidae); from Cebu Island, Philippine Islands, *Babelomurex jeanneae*, *Coralliophila armeniaca* and *Coralliophila caroleae* (Coralliophilidae). Additional comments and illustrations are provided on protoconch and opercular characters of *Coralliophila neritoidea* (Lamarck 1816), the type of *Coralliophila*, and for *Coralliophila erosa* (Röding 1798). The latter two species occur intertidally and subtidally on coral reefs in the tropical Indo-Pacific Ocean.

INTRODUCTION

Within the Muricidae, the genus *Hexaplex* Perry, 1811, includes those species with a solid and globose shell bearing five to eight spinose more or less foliaceous varices. The type species, *Hexaplex cichoreum* (Gmelin 1791) occurs in the Philippine Islands. Specimens from the Persian Gulf, heretofore unknown, are referable to this genus as a new species, which we describe in this report. We compare this new taxa to related species from the Mediterranean Sea, Indian Ocean and western Atlantic Ocean.

Four new species of Coralliophilidae are also described here. The Coralliophilidae is separable from all other muricacean families in lacking a radula (Thiele 1929, Robertson 1970). The members of this family feed suctorially and most are recognized as ectoparasites or predators on various species of Cnidaria. These mollusks move from host to host, though they are not known to be highly destructive to their prey (Ward 1965, Robertson 1970, 1980). They have a thaid type operculum with a lateral nucleus. Unfortunately shell characters for this family are unstable taxonomic criteria and the relationships within the family are complicated further by the lack of a radula. The radula is often a distinctive character in the classification of other muricacean taxa at the generic level. Twenty-seven genera of Coralliophilidae were enumerated by D'Attilio (1978) and four more have since been added (D'Attilio 1979, Kosuge 1979), bringing the total to 31. The two genera considered herein are *Coralliophila* H. and A. Adams, 1853, and *Babelomurex* Coen, 1922. In *Coralliophila* a spinose spiral keel is wanting and there is little sign of episodic growth. Rather growth takes place in continuous increments. Species assigned to *Babelomurex* possess a spinose shoulder keel and may have additional spinose keels on the body whorl. The leading edge of the spines usually indicates growth in an episodic manner similar to varices in the Muricidae.

In addition to the five new species, two others are discussed: *Coralliophila erosa* (Röding 1798) and *C. neritoidea* (Lamarck 1816). These two species are widespread in the Indo-Pacific, where they inhabit intertidal and subtidal coral reefs. Illustrations of certain morphological details for these two species have not been published previously.



FIGURES 1-4. *Hexaplex rileyi* D'Attilio & Myers. Dorsal (1) and apertural (2) views of holotype, SDNHM 81618. Dorsal (3) and apertural (4) views of paratype, SDNHM 81617a.

The following abbreviations are used: SDNHM (San Diego Natural History Museum); AMNH (American Museum of Natural History, New York); and USNM (National Museum of Natural History, Washington, D.C.).

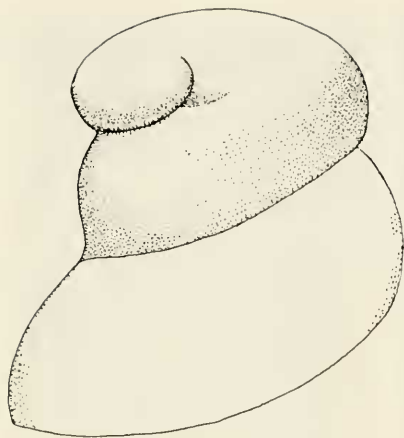
SYSTEMATIC ACCOUNT

Phylum Mollusca
 Superfamily Muricacea
 Family Muricidae Rafinesque, 1815
 Subfamily Muricinae Rafinesque, 1815
 Genus *Hexaplex* Perry, 1811

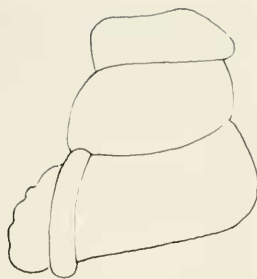
Type species.—*Hexaplex foliacea* Perry, 1811 by subsequent designation Iredale 1915 (= *Murex cichoreum* Gmelin, 1791).

Hexaplex rileyi new species
 Figures 1-6

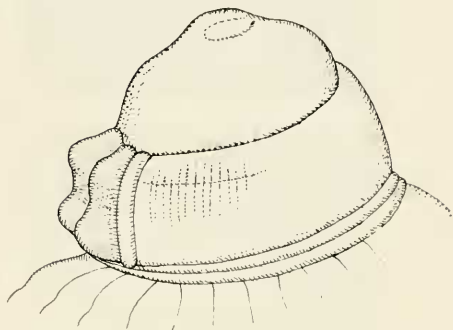
[Note: Biggs (1973:pl. 5, figs. 8, 9) figured a specimen of *Hexaplex rileyi*, but erroneously referred it to *Murex küsterianus* (Tapparone-Canefri 1875).]



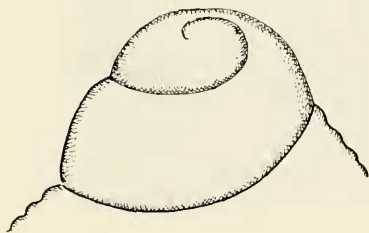
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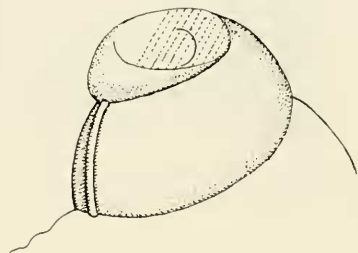
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FIGURES 5 AND 6. Detail drawing of the protoconch of *Hexaplex rileyi* from SDNHM 81617b.

FIGURES 7 AND 8. Detail drawing of the protoconch of *Hexaplex fulvescens* (Sowerby 1834). SDNHM 81620.

FIGURE 9. Detail drawing of the protoconch of *Hexaplex küsterianus* (Tapparone-Canefri 1875). SDNHM 78106.

Description.—Shell broadly biconic; grayish white with three pale brown bands distributed evenly over body whorl, bands mostly distinguishable within outer aperture. Protoconch of holotype eroded. Six weakly sloping, tabulate postnuclear whorls; suture impressed. Aperture ovate, comparatively large; outer lip crenulate, reflecting external sculpture; inner lip white, mostly appressed; anal sulcus well-defined, U-shaped. Siphonal canal open, of moderate length, bent to left and recurved, with five previous canal terminations; umbilical chink present. Axial sculpture of nine strong, spinose varices on body whorl which cross shoulder and terminate at suture. Five lamellose major cords terminate in open spines on each varix; between major cords are numerous minor cords of varying width. Entire shell including shoulder finely scabrous. A prominent single row of open spines on siphonal canal with space separating this row of spines from those on body whorl.

Color.—Grayish white with three weak brown bands.

Type material.—Holotype: SDNHM 81618. Paratypes: SDNHM 81617a and 81617b; AMNH 213801; USNM 819632.

Other material examined.—Twelve specimens from the type locality, Kenneth Riley collection.

Type locality.—64 km offshore, United Arab Emirates in The Gulf (Persian); depth 15 m; clinging to petroleum field rigs.

Dimensions (in mm).—

	Length	Width
SDNHM 81618 (holotype)	51.0	36.8
SDNHM 81617a (paratype)	47.0	36.5
SDNHM 81617b (paratype)	21.0	15.8
USNM 819632 (paratype)	39.0	29.5
AMNH 213801 (paratype)	33.0	25.0
12 uncatalogued specimens	from 26.5	19.5
in the K. Riley coll.	to 43.9	31.4

Etymology.—Named for Mr. Kenneth Riley, a petroleum engineer who collected the specimens.

Discussion.—The color of this species ranges from pure white to pale brownish white with indistinct brown bands. The varices number from six to nine and the postnuclear whorls from five to six. Protoconch of paratype SDNHM 81617b has two and one-third smooth whorls, somewhat tabulate and of nearly equal diameter.

This new species is similar to *Hexaplex trunculus* (Linné 1758) from the Mediterranean Sea. *Hexaplex trunculus*, however, has a higher spire, is less tabulate, the body whorl is more convex and bulges at the shoulder, and the aperture is larger.

Further comparison can be made with *Hexaplex fulvescens* (Sowerby 1834), which occurs in the western Atlantic and the Gulf of Mexico, and *H. küsterianus* (Tapparone-Canefri 1875) from the Indian Ocean. *Hexaplex fulvescens* has a much larger shell (to 200 mm), the shoulder is non-tabulate, suture weakly impressed, aperture denticulate, and canal much longer. In addition, the varices are concave on their receding side, and the shell is white with reddish brown lines over the spiral threads of the entire shell. *Hexaplex fulvescens* has a protoconch of three convex whorls which show very weak axial grooves (Figs. 7, 8). *Hexaplex küsterianus* has a broad shell with a low spire and indistinct suture. The body whorl is very broad and the aperture large. The protoconch of *H. küsterianus* has an indistinct number of convex whorls (Fig. 9).

Family Coralliophilidae Chenu, 1859

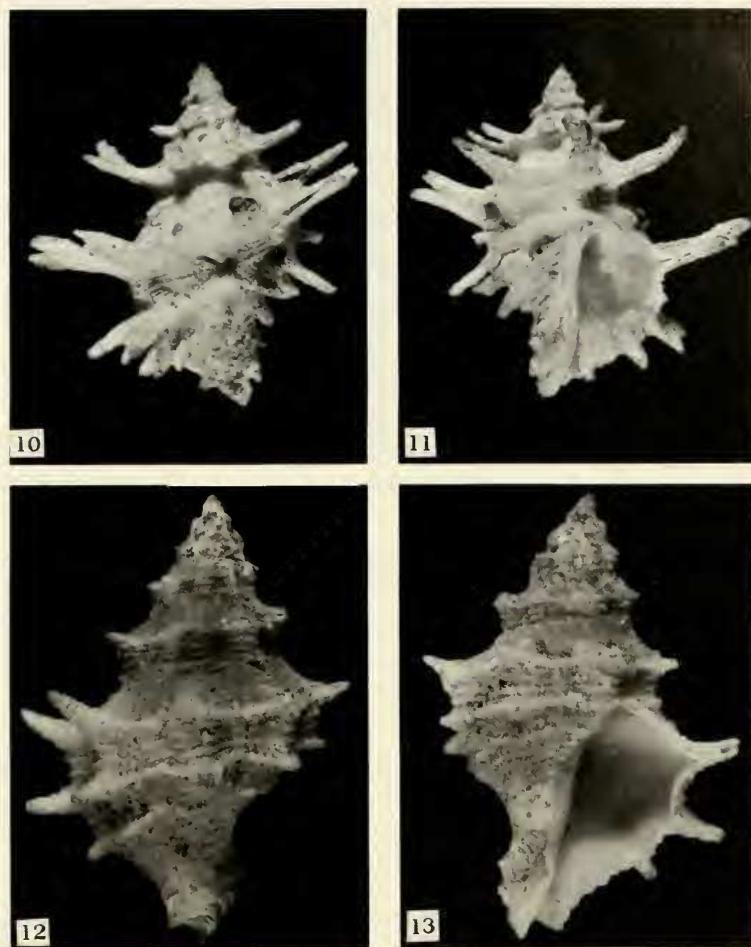
Genus *Babelomurex* Coen, 1922

Type species.—*Fusus babelis* Reuquen, 1848 by original designation.

Babelomurex deroyorum new species

Figures 10–14

Description.—Shell broadly fusiform; spire moderately high; suture weakly impressed. Protoconch of holotype eroded; teleoconch of six whorls; aperture large, ovate; outer lip sharp, with spiral grooves resulting from open spines at margin. Anal sulcus broad, shallow; inner lip demarked by elongate node; canal short, open, recurved; siphonal fasciole with chink and five short canal terminations. Axial sculpture of ten varices with weakly defined margins on body whorl; penultimate body whorl with nine varices; strong shoulder keel separated by gap from two close-set keels below. Narrow, flatly triangular, relatively long spines arise at varical margins; spines on keel directly below shorter, and those on most anterior keel progressively shorter; presence of terminal portions of secondary keel obscuring suture; fine squamous threads covering entire surface, including upper and lower surface of spines; spiral threads coarser on canal.



FIGURES 10–13. *Babelomurex deroyorum* D'Attilio & Myers. Dorsal (10) and apertural (11) views of holotype, SDNHM 81613. Dorsal (12) and apertural (13) views of paratype, SDNHM 81616a.

Color.—White, showing some slight attrition; small patches are covered with a red hydrocoral or bryozoan; paratypes with a lustrous white aperture.

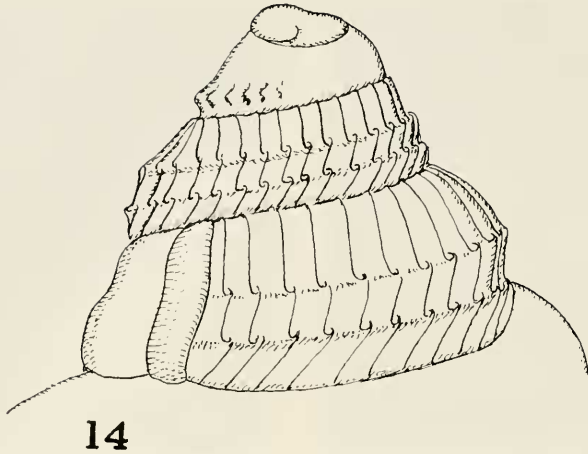
Type material.—Holotype: SDNHM 81613. Paratypes: SDNHM 81616a, 81616b, and 81616c; USNM 819633a and 819633b; AMNH 213802a and 213802b.

Type locality.—Dredged from 75–100 m off Isla Isabella (Albemarle Island), Tagus Cove, Galápagos Islands; January 1969.

Dimensions (in mm).—

	Length	Width
SDNHM 81613 (holotype)	28.8	29.3
SDNHM 81616a (paratype)	17.0	12.5
SDNHM 81616b (paratype)	12.2	8.9
SDNHM 81616c (paratype)	8.4	7.4
AMNH 213802a (paratype)	13.8	11.0
AMNH 213802b (paratype)	9.8	9.2
USNM 819633a (paratype)	12.7	9.0
USNM 819633b (paratype)	8.0	5.5

Etymology.—Named for the collectors, Mr. and Mrs. Andre DeRoy, who through their collecting efforts, have contributed to our understanding of the endemic molluscan fauna of the Galápagos Islands.



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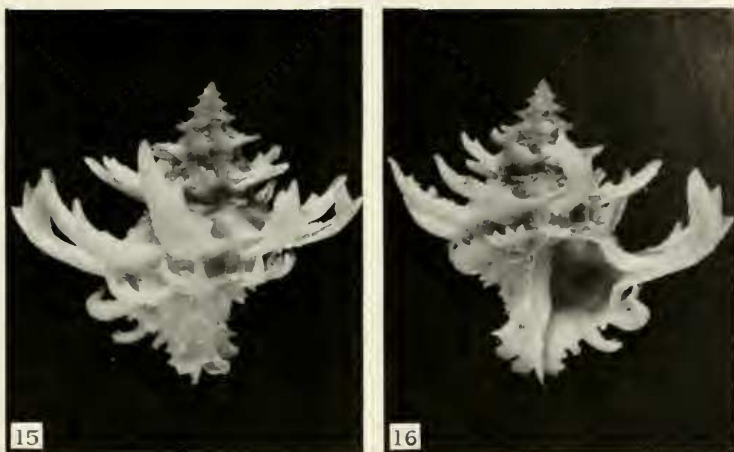
FIGURE 14. Detail drawing of the protoconch of *Babelomurex deroyorum* from SDNHM 81616c.

Discussion.—In addition to the holotype, which is a dead empty shell showing some attrition, seven smaller specimens were studied, the largest of which possesses five whorls. The keel, showing spines, appears clearly on the third postnuclear whorl. Protoconch of SDNHM 81616c has three and one-half whorls with a spiral cord in the center and a second spiral cord below; axial threads are diagonal to the protoconch, knob-like across the spiral cords. This new species differs from all other eastern Pacific and western Atlantic species in the narrow, elongate spines, and finer squamous sculpture. This species was recovered from the same area as *Babelomurex santacruzensis* (Emerson and D'Attilio 1970) which has a single row of spines on the shoulder and is more closely related to *B. dalli* (Emerson and D'Attilio 1963) from the western Atlantic. Other eastern Pacific species are *B. oldroydi* (Oldroyd 1929), *B. costata* (Blainville 1832), and *B. hindsii* (Carpenter 1857). *Babelomurex oldroydi* is found off the California coast and has a larger, heavier, coarser shell than *B. deroyorum* and possesses three spinose keels. *Babelomurex costata* is similar to *B. oldroydi*, but with less developed and variably keeled spiny cords; *B. hindsii* is smaller than any of these species.

Babelomurex jeanneae new species

Figures 15–20

Description.—Shell biconically fusiform; height from top of aperture to canal termination, 10 mm. Protoconch of holotype eroded; six postnuclear angulate whorls with large spinose keel at shoulder angle; suture obscured by anteriorly directed, scabrous-edged spinose keel corresponding to secondary keel on body whorl; aperture relatively large, ovate; columella pillar straight except for slight concavity midway; inner lip edge weakly erect anteriorly, outer lip (not entirely mature) extending into the open spines; siphonal canal short, broad, open, recurved; fasciole strongly sculptured, with four older canal terminations; umbilical chink narrow but deep; seven varices on body whorl, eight on penultimate whorl; all varices terminating in lengthy spines. Spiral sculpture of a primary row of broad, contiguous, open spines forming the keel; growth of spines episodic, giving them a scaly or foliated appearance. Outer portion of primary spine bent in direction of growth and entire spiny keel recurved posteriorly; second and third row of spines below; bases of secondary spines contiguous and forming keels. Five progressively smaller scabrous rows of spines on canal; one similar scaly row between second and third row of spines; six rows of weak scabrous spiral cords above shoulder terminating at apertural margin.



FIGURES 15 AND 16. *Babelomurex jeanneae* D'Attilio & Myers. Dorsal (15) and apertural (16) views of holotype, SDNHM 79499.

Color.—Creamy white, stained with pale ochre in depressed part of shoulder and body at receding side of margin.

Type material.—Holotype: SDNHM 79499. Paratypes: SDNHM 79500 and 81402.

Other material examined.—One specimen in the Rose D'Attilio collection, one specimen in the Barbara W. Myers collection and one specimen in the Donald Pisor collection.

Type locality.—Bohol Straits between the Islands of Cebu and Bohol in the Philippine Islands.

Dimensions (in mm).—

	Length	Width
SDNHM 79499 (holotype)	21.5	25.5
SDNHM 81402 (paratype)	22.9	25.9
SDNHM 79500 (paratype)	23.5	22.0
R. D'Attilio coll.	17.0	29.0
B. W. Myers coll.	23.0	25.0
D. Pisor coll.	22.0	24.5

Etymology.—Named for Jeanne Pisor, who with her husband Donald Pisor, have made noteworthy contributions to the molluscan collections of the San Diego Natural History Museum.

Discussion.—There may be one or two spiny cords below the shoulder keel; the number of cords below the secondary keel varies from four to six; growth striae may be strong. SDNHM 79500, with a mature outer lip, retains a white intritacalx, a chalky white surface layer in some mollusks (D'Attilio and Radwin 1971), with no color other than the white surface. The specimen in the R. D'Attilio collection has unusually broad, lengthy spines. The protoconch on this specimen has two and one-half whorls; the earliest portion is smooth, followed by a sculptured portion with five close-set axial striae and two spiral cords, beaded where crossed by striae. The specimen in the Barbara W. Myers collection is white flushed with a pale violet-pink, and the spines curve strongly in the direction of growth.

Babelomurex jeanneae probably belongs to a complex of species, the best known of which is *B. pagodus* [of authors, not *B. pagodus* (A. Adams 1853) (see D'Attilio 1983)]. Characters similar to *B. pagodus* are the possession of a spinose keel at the shoulder and a secondary keel midway on the body whorl followed anteriorly by a

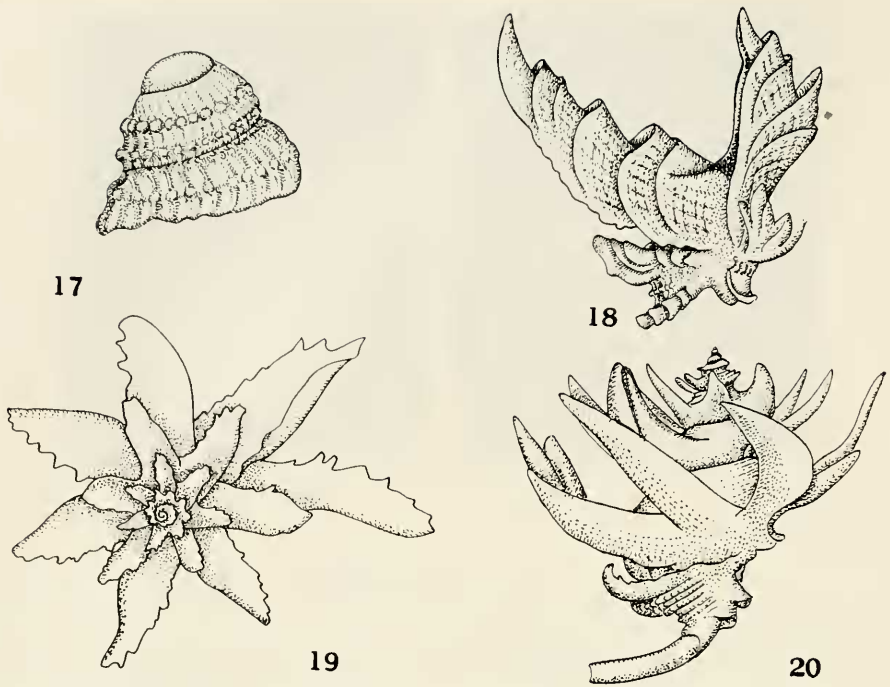


FIGURE 17. Detail drawing of the protoconch of *Babelomurex jeanneae* from specimen in the Rose D'Attilio collection.

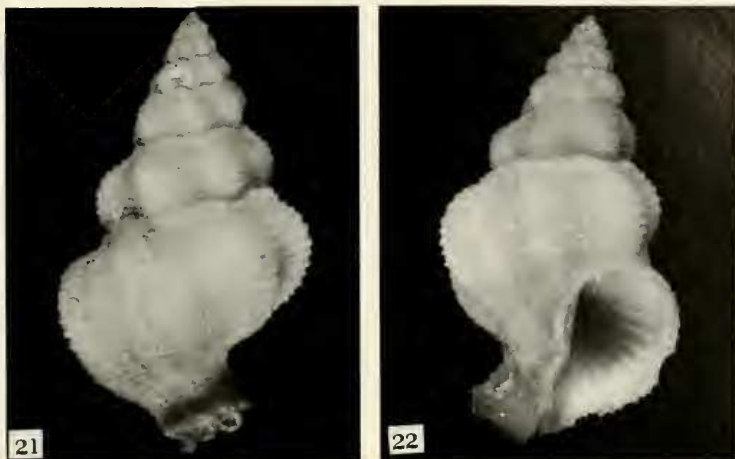
FIGURES 18 AND 19. *Babelomurex jeanneae*. Specimen from the Rose D'Attilio collection. Detail of spine formation showing scales or foliations (18). Detail of broad spines as viewed from above (19).

FIGURE 20. *Babelomurex jeanneae*. Detail showing spines curved in the direction of growth from specimen in the B. W. Myers collection.

series of progressively diminishing spinose cords. *Babelomurex pagodus* also has a white shell shaded with ochre in the concave portions of the intervarical areas. Varical spinose projections also number around eight and are sharply triangulate. *Babelomurex pagodus* is well known and common in southeastern Japan. Based on literature records its geographic range is extensive, being known throughout the central and western Pacific. As far as is known from the extensive collecting done in Japan, *B. jeanneae* does not occur there. Cebu specimens of *B. pagodus* resemble in shell morphology specimens from southeastern Japan.

Babelomurex fruticosus (Kosuge 1979), described from specimens obtained in the Straits of Bohol between Cebu and Bohol Islands, has some similarity to *B. jeanneae* in its possession of a spinose keel at the shoulder and one midway on the body whorl. However, the spire is comparatively higher, the area below the shoulder keel shorter, appearing compressed, and there are only two spinose cords. The spines are narrow, often very elongate, bent or recurved, and their receding side ornamented with sharply pointed narrow spinelets imparting to the spines a resemblance to deer antlers. In addition, the entire shell is suffused with rich pink or pink-violet, or at times creamy white with red-brown at the keel concentrated on the receding side of the varix.

Babelomurex cristatis (Kosuge 1979) also has conchological characters similar to *B. jeanneae*. However, the eight shoulder keel spines in *B. cristatus* are shorter, strongly up-turned and recurved, with spinelets on their receding side; the secondary keel on the mid-area of the body whorl is mostly non-spinose except in mature specimens. Two or three inconspicuous cords occur below the mid-cord, and a nearly obsolete spiral cord may be present on the canal; the intervarical areas are relatively broad and the shell surface is finely and scabrously striate; the color is light to dark tan (flesh), occasionally being a deeper brown in the concave areas between the strongly formed, rounded, axial costae.



FIGURES 21 AND 22. *Coralliophila armeniaca* D'Attilio & Myers. Dorsal (21) and apertural (22) views of holotype, SDNHM 79507.

Genus *Coralliophila* H. and A. Adams, 1853

Type species by subsequent designation Iredale 1912: "*Murex neritoideus* Chem. [nitz]" = *Murex neritoideus* Gmelin, 1791, not Linné, 1767 = *Fusus neritoideus* Lamarck, 1816 (syn. *Purpura violacea* and *P. diversiformis* Kiener, 1836).

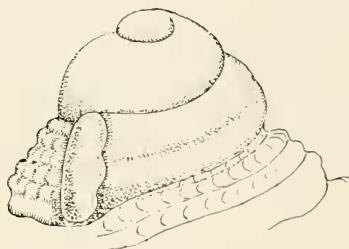
Coralliophila armeniaca new species

Figures 21–24

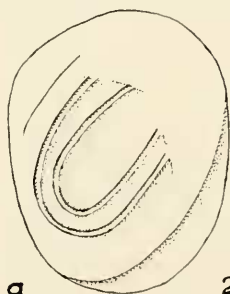
Description.—Shell fusiform above, compressed anteriorly. Protoconch of holotype eroded; six postnuclear convex whorls; suture wavy, distinct; body whorl large, sharply



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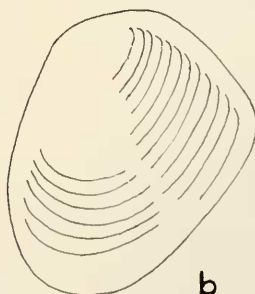


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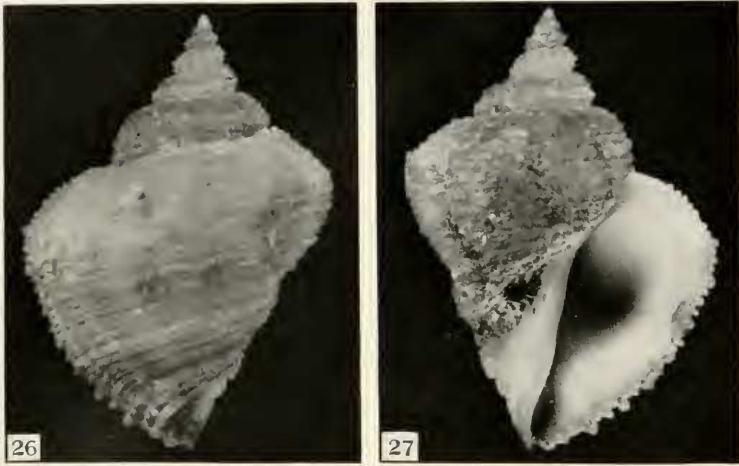


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FIGURE 23. Detail drawing of the protoconch of *Coralliophila armeniaca* from SDNHM 79504i.

FIGURE 24 (a) AND (b). Detail drawing of the operculum of *Coralliophila armeniaca* from holotype, SDNHM 79507. Internal (a) and external (b) views.

FIGURE 25. Detail drawing of the protoconch of *Coralliophila rosacea* (Smith 1903) from SDNHM 72131.



FIGURES 26 AND 27. *Coralliophila caroleae* D'Attilio & Myers. Dorsal (26) and apertural (27) views of holotype, SDNHM 79505.

incurved below, flaring out at siphonal fasciole. Aperture large with ten lengthy lirae within; lirae at the crenulate outer lip more numerous, reflecting external spiral sculpture; inner lip erect on lower two-thirds, adherent above. Anal sulcus very weak posteriorly at juncture of outer lip and columella; siphonal canal open, relatively short and broad, recurved, with numerous strong canal terminations on the flaring fasciole, umbilical chink present. Shell with axial sculpture of six swollen, rounded ribs set close together, terminating at base of body whorl below and diminishing in strength as they abut the whorl above. Spiral sculpture of primary and secondary cords form entire surface of the shell; about 15 primary cords with intercalary secondary cords on the body whorl below the shoulder; similar cords covering the shoulder; all cords weak to strongly scabrous. Operculum thin, translucent, amber-brown with concentric ridges externally; internally with two small cords; horseshoe shaped.

Color. — Deep apricot with slight orange cast; paratypes range from violet to apricot-pink. Aperture pale orange at edge of outer lip, white within and on the columella.

Type material. — Holotype: SDNHM 79507. Paratypes: SDNHM 79504a–j; USNM 819634a and 819634b; AMNH 213803a and 213803b.

Type locality. — All specimens from approximately 75 m depth off Cebu Island, in the Bohol Straits, Philippine Islands; obtained with ground nets.

Dimensions (in mm). —

	Length	Width
SDNHM 79507 (holotype)	20.5	11.9
SDNHM 79504a (paratype)	20.0	10.2
SDNHM 79504b (paratype)	18.5	10.5
SDNHM 79504c (paratype)	17.2	8.9
SDNHM 79504d (paratype)	12.5	6.4
SDNHM 79504e (paratype)	13.9	7.3
SDNHM 79504f (paratype)	12.8	6.8
SDNHM 79504g (paratype)	12.1	6.2
SDNHM 79504h (paratype)	10.0	5.0
SDNHM 79504i (paratype)	9.0	5.0
SDNHM 79504j (paratype)	9.8	5.0
AMNH 213803a (paratype)	13.5	7.0
AMNH 213803b (paratype)	8.0	4.5
USNM 819634a (paratype)	15.0	8.0
USNM 819634b (paratype)	7.0	4.0

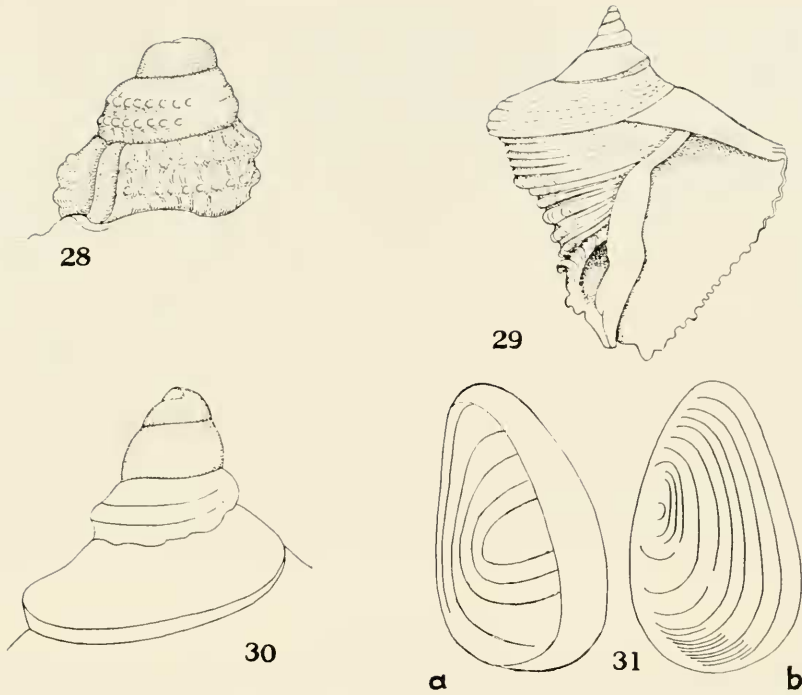


FIGURE 28. Detail drawing of the protoconch of *Coralliophila caroleae* from holotype, SDNHM 79505.
 FIGURE 29. *Coralliophila neritoidea* (Lamarek 1816). Apertural view of a juvenile SDNHM 66538.
 FIGURE 30. Detail drawing of protoconch of *C. neritoidea* from SDNHM 66538.
 FIGURE 31 (a) AND (b). Detail drawing of operculum of *C. neritoidea* from SDNHM 66538. Internal (a) and external (b) views.

Etymology.—From *armeniacus*, referring to the color of ripe apricot fruit.

Discussion.—This species appears closely allied to *Coralliophila fritschi* (von Martens 1874) and *C. rosacea* (Smith 1903), both from South Africa. Another apparently closely related species is *C. arbutum* (Woolacott 1954) (= *Rhombothais arbutum* Woolacott 1954) from New South Wales, Australia. These three species differ from *C. armeniaca* by their possession of broadly fusiform shells with a larger body whorl, widest at mid-height. In contrast, *C. armeniaca* has a relatively high spire and the shell is broadest well below mid-height. In addition, the angulate shoulder of *C. arbutum* gives it a biconic shape. Protoconch of SDNHM 79504i has three and one-half whorls: the first whorl is smooth and rounded whereas the remaining whorls have two spiral cords crossed by axial ridges and the nodes are poorly developed where the axial and spiral sculpture cross. The protoconch of *C. rosacea* is illustrated for comparison (Fig. 25).

Coralliophila caroleae new species
 Figures 26–28

Description.—Shell small, biconic; spire concave, low to moderate height; body whorl swollen with moderately angled shoulder tapering to a short, open canal. Protoconch of nearly three whorls, ridged and beaded. Six postnuclear whorls, moderately angled; suture not clear as each succeeding whorl encroaches and somewhat submerges previous whorl up to body whorl where suture is clearly defined. Aperture wide, with sinuous crenulate outer lip; inner lip smooth, adherent posteriorly; canal short and open. Siphonal fasciole composed of a curving scabrous ridge; umbilical chink moderately deep. Axial sculpture beginning on first postnuclear whorl with nine ribs, increasing to 14 on subsequent whorls and fading at fourth postnuclear whorl, becoming

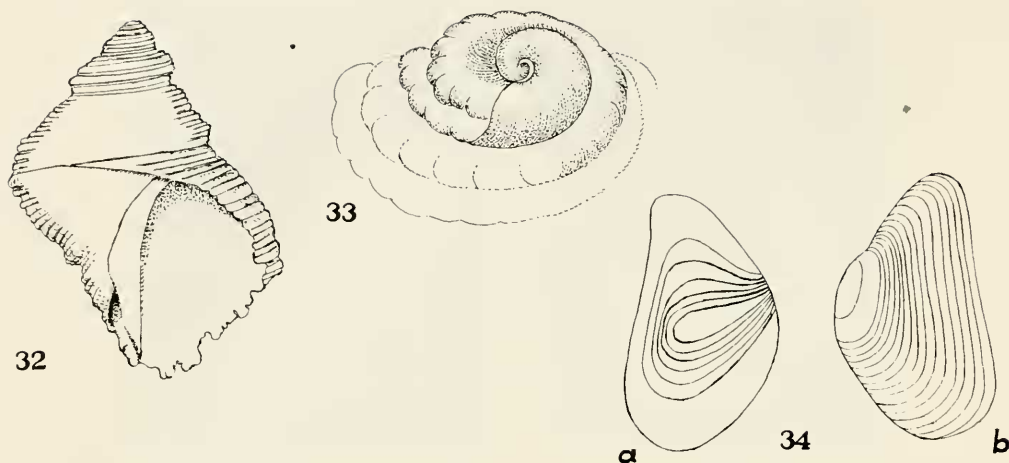


FIGURE 32. *Coralliophila erosa* (Röding 1798). Apertural view of a juvenile SDNHM 77174.

FIGURE 33. Detail drawing of the protoconch of *Coralliophila erosa* from SDNHM 77174.

FIGURE 34 (a) AND (b). Detail drawing of the operculum of *C. erosa* from SDNHM 77174. Internal (a) and external (b) views.

barely visible on body whorl. Spiral sculpture of scabrous major and minor cords above and below periphery, with strong major cord at periphery of each whorl. Body whorl with 11 cords between suture and periphery, and 28 cords from periphery to canal; width of cords variable; interspaces narrow.

Color.—Dull orange; aperture orange; inner lip pale orange.

Type material.—Holotype: SDNHM 79505. Paratypes: SDNHM 79503 and 81614.

Other material examined.—One specimen in the Donald Pisor collection and one specimen in the James Springsteen collection.

Type locality.—Bohol Straits between the Islands of Cebu and Bohol in the Philippine Islands, dredged with bottom nets at 75–100 m.

Dimensions (in mm).—

	Length	Width
SDNHM 79505 (holotype)	19.2	13.6
SDNHM 79503 (paratype)	14.3	11.0
SDNHM 81614 (paratype)	16.8	9.2
D. Pisor coll.	15.1	11.8
J. Springsteen coll.	12.5	7.9

Etymology.—Named for friend and co-worker, Carole M. Hertz.

Discussion.—This new species is similar to two other deep water species from Mactan Island, Cebu, Philippine Islands: *Coralliophila elvirae* D'Attilio and Emerson, 1980, and *C. solutistoma* Kuroda and Shikama, 1966. Although *C. solutistoma* was described from Japan, it has been recently discovered in the Philippine Islands (D'Attilio and Emerson 1980).

The spire of *C. elvirae* is higher and convex rather than concave as in *C. caroleae*. The aperture of *C. elvirae* is restricted to a comparatively longer, narrow opening, with the inner and outer lip parallel, whereas *C. caroleae* has a broad aperture and swollen body whorl. The protoconch of *C. elvirae* consists of two and one-fourth whorls with weakly beaded cords; there is only one cord on the final whorl (D'Attilio and Emerson 1980). The protoconch of *C. caroleae* has two and one-half to three whorls, the beading on the cords is much stronger, and the final whorl has two cords. *Coralliophila solutistoma* has a heavier, larger shell with a higher spire and less inflated body whorl; the axial ribbing is much stronger and the ribbing is continuous over the entire shell. The protoconch is more coarsely beaded (D'Attilio and Emerson 1980).

NOTES ON TWO ADDITIONAL SPECIES OF *CORALLIOPHILA*

Two well-known species of *Coralliophila*, widely distributed throughout the Indo-Pacific, are discussed below. The two species are usually found in such eroded and encrusted condition that morphological characters are obscured. Hence, an adequate description of the protoconch and early whorls has been lacking in the literature. We are fortunate in having at our disposal (SDNHM) juvenile specimens of each, and we have thus appended information regarding their shell morphology, protoconch and operculum to add to a general understanding of the genus.

Coralliophila erosa Röding, 1798

Figures 32–34

This species is distributed throughout the Indo-Pacific, mostly intertidal. Morphologically it exhibits considerable inter- and intrapopulation variation. The shell is often, as the name suggests, encrusted or eroded, obscuring the finely scabrous surface. It has a characteristic sinuous outer lip, the upper portion of which is deeply concave. The operculum is thin with close concentric ridges externally; internally there are six U-shaped ridges. The protoconch is distinguished by having one and three-fourths low and weakly convex whorls; spire is depressed. An uneroded juvenile specimen (SDNHM 77174) from Hawaii is illustrated.

Coralliophila neritoidea Lamarck, 1816

Figures 29–31

This species has a distribution and habitat similar to *Coralliophila erosa*. The white shell is most often encrusted with calcareous organisms. When not encrusted or eroded, the surface of the shell is spirally scabrous. After the first two to three postnuclear whorls there often follows a rapid expansion of the body whorl. The purple aperture is less prominent in immature specimens. The operculum is a dark chocolate brown with a lateral mid-central nucleus. Internally it has a thickened ridge and four ovate ridges spaced over the remaining surface. The protoconch has two to two and one-half smooth, acutely conical whorls, followed by a whorl with a midway rib. A juvenile specimen (SDNHM 66538) is illustrated.

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